

An Orally Presented
GROUP TEST
OF INTELLIGENCE
for Juniors

J. CORNWELL

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METHUEN : LONDON

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AN ORALLY PRESENTED GROUP TEST
OF INTELLIGENCE FOR JUNIORS

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GROUP TEST
OF INTELLIGENCE
for Juniors

Constructed and Standardised by

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SCOPE AND PURPOSE OF THE TEST

This test has been devised for oral group presentation to children between the ages of eight and eleven, and should prove useful for the following purposes:

- (i) preliminary classification of children into groups broadly homogeneous in respect of intelligence;
- (ii) as a preliminary assessment of intelligence, applicable not only to brighter juniors but also to those whose reading ages are known to be, or suspected to be, less than nine years;
- (iii) for the confirmation of I.Q.s derived from a previous single group test of intelligence;
- (iv) in the diagnosis of retardation, where the teacher is concerned with relatively gross discrepancies between potential and performance of the order of one and a half years.

NOTE ON THE TEST'S CONSTRUCTION AND STANDARDISATION

A complete account of the construction, standardisation, and validation of the test is contained in a thesis lodged with the University of Birmingham Library. A much shorter account is contained in an article in the *Educational Review*, journal of the Birmingham University Institute of Education, Vol. 3, No. 3.

Very briefly, the test in its present form represents the residue from 270 items applied to 900 children in preliminary try-outs, then analysed by the upper, middle, and lower thirds technique, and finally

reduced to 100 items in five sub-tests after scrutiny in respect of sub-test inter-correlation, the tetrad criterion, popularity with children, fatigue in children and tester, and practicability and ease of administration.

The test was then applied to 4150 children between the ages of eight and twelve, and after study of these results standardisation was carried out with the year group 10-11, containing 936 children, by the method established by Professor Godfrey Thomson.¹ As an additional precaution, the norms obtained by extrapolation for the 8-9 group were re-checked empirically.

Norms were derived by using standard scores centred on 100 with a standard deviation of 16.5.²

VALIDATION

For correlation of results with those of an established group test the present test has been checked against Richardson's "Simplex Junior Intelligence Scale". With a representative sample of 200 children between the ages of nine and eleven a Pearson product moment correlation co-efficient of .907 ($\pm .051$) was obtained.

RELIABILITY

Calculated by the method of split-halves (Rulon's formula), using 200 children from a single year group (Mean I.Q. 99.8, S.D. 17.06), the Reliability Co-efficient was .953 ($\pm .004$).

¹ "The Standardisation of Group Tests and the Scatter of Intelligence Quotients," G. H. Thomson, *B. J. Ed. Psy.*, Vol. 2, Parts 1 and 2, 1932.

² The S.D. of the New Revised Stanford-Binet Scale is 16.5 at age 10 years with Form L.

ADMINISTRATION OF THE TEST

(1) The test consists of five sub-tests, each of twenty items. Each sub-test takes from fifteen to twenty minutes to administer, and each should be given on a separate occasion in a normal time-table period, without any suggestion of the "special occasion". Given in this way, each sub-test is long enough for sustained effort but short enough to avoid fatigue. This is of particular importance in a test devised for oral group presentation, where concentration has to be sustained at a high level throughout, for the reception as well as the interpretation of each item.

(2) The teacher should study carefully beforehand the instructions preceding each sub-test, and should then adhere to them scrupulously, word for word.

(3) It is realised that children will probably be taking the test under normal classroom conditions, and that examination spacing will not always be possible. Care therefore must be taken to prevent copying.

(4) Answers should be written in pencil on a sheet of ordinary exercise book paper with horizontal rulings (20 horizontal lines are used.) The whole test can be done on a single side of the sheet, which should be ruled vertically to give five equally spaced columns. At the top of each column is written the number of the sub-test, and down each column the numbers 1-20. The preparation of the sheet in this way is best done in a separate preparatory period rather than on the occasion of the giving of the first sub-test.

(5) Before each item, the teacher reads out its number. *Each item is read twice.* After the second reading the teacher allows ten seconds to elapse before going on to the next item. It is not intended that the teacher should time this interval with a watch, but it is intended that he should practise this timing beforehand, so that before administering the test he has learned to estimate ten seconds with a fair degree of accuracy.

If some children are still writing the answer to a previous question when it is time to proceed to the next, the teacher must *not* try to make them stop writing as he gives the next question. He goes straight ahead, allowing the whole procedure to be as rhythmic and automatic as possible.

The teacher must, of course, be particularly careful that no facial expression, intonation, or emphasis of any kind assists the child in differentiating between right and wrong responses.

MARKING

In marking, the answer key must be strictly followed. Any answers other than those given in the key are to be regarded as wrong.

Each item correctly answered counts one point. The maximum raw score for each sub-test is thus twenty points, and for the whole test one hundred points. There are no half points, and no half points should be given.

Where a child has changed his answer, the point should be allowed if the final intention is clear and correct.

If more than one answer is given to any item, no point is allowed.

USE OF THE NORMS

The child's chronological age, in months, should be obtained from the class register, not from the child. From this, and from his total raw score in the test, his "I.Q." can be read off from the Table of Norms.¹ It will be found at the point where the vertical column below his score intersects with the horizontal opposite his chronological age in months.

¹ As Thomson points out, these standard scores make no claim, strictly speaking, to be I.Q.s, but in fact give an index closely resembling a Binet I.Q., having the same standard deviation. "Standard scores in fact are a device to give perfect age allowance, and to give the same standard deviation as Binet I.Q.s, while avoiding any claims to be actually quotients in the sense of a mental age divided by a chronological age."

SUB-TEST ONE

INSTRUCTIONS. *To be presented Slowly, Loudly, Clearly.*

Teacher puts the following on the blackboard in large, legible print:

1. HOT—COLD
2. BAD—WICKED
3. FAT—CLEVER

Teacher says: "Look at the words on the blackboard while I read them. (*Reads them.*) There are three pairs of words on the board. In one pair the two words mean the same as one another. Which pair is that? Yes, 'Bad' and 'Wicked' mean the same. In another pair the two words mean exactly the opposite. Which pair is that? Yes, 'Hot' and 'Cold' are opposite. And what about the third pair—'Fat', 'Clever'. Do they mean the same? No, fat people are not always clever! Do 'Fat' and 'Clever' mean opposite to one another? No, they are not opposite, because fat people are not always foolish either! So the words 'Fat' and 'Clever' mean neither the same, nor the opposite. In fact they have nothing to do with one another.

Now I am going to *read* to you some pairs of words like these, and if the two words in a pair mean the same thing, or nearly the same, I want you to put a tick, like this. (*Teacher prints large on blackboard* ✓ = Same.) If the two words mean the opposite, that is if their meanings are completely different, I want you to put a cross, like this. (*Teacher prints large on blackboard* × = Opposite.) If the two words mean neither the same nor the opposite, and have nothing

to do with one another, I want you to put both a tick and a cross for your answer, like this. (*Teacher prints large on the blackboard* $\checkmark \times =$ Neither.)

Look at the pairs on the board again. What would you write for your answer to pair number one? Yes, a cross because they are opposite. (*Teacher puts \times after HOT—COLD.*) And what for pair number two? Yes, a tick because they mean the same. (*Teacher puts \checkmark after BAD—WICKED.*) And for pair number three? Yes, a tick *and* a cross, because they are neither the same as one another, nor the opposite.

If you don't know the answer, you just put a dash, like this. (*Teacher prints* $— =$ Don't Know. *Then rubs off example words, leaving on the blackboard throughout the test the key:* $\checkmark =$ Same, $\times =$ Opposite, $\checkmark \times =$ Neither, $— =$ Don't Know.)

Now I am going to read you some pairs of words. I shall read each pair twice, then give you time to think of the answer and write it down. Don't forget, the answer is always a tick, or a cross, or a tick *and* a cross. Nothing else. You don't have to write any words down at all. Remember that. Just a tick or a cross, or a tick and a cross. And if you don't know, put a dash. I shall read the number of the question first each time, so be sure you put your answer by the proper number. Get ready for number one.

1. LITTLE—SMALL
2. UP—DOWN
3. FRESH—STALE
4. FAST—SLOW
5. FIRST—LAST
6. STUPID—FOREIGN
7. SWIFT—SPEEDY
8. NORTH—SOUTH
9. DAMP—MOIST
10. NARROW—CURVED
11. EMPTY—VACANT
12. DEPART—ARRIVE
13. BRAVE—CLEVER
14. CONFIDENT—EXACT
15. HONEST—HUMBLE
16. EXIT—ENTRANCE
17. EXPAND—CONTRACT
18. VERTICAL—UPRIGHT
19. CLIMB—ASCEND
20. CONCEAL—EXHIBIT”.

ANSWER KEY

1. ✓	6. ✓ x	11. ✓	16. x
2. x	7. ✓	12. x	17. x
3. x	8. x	13. ✓ x	18. ✓
4. x	9. ✓	14. ✓ x	19. ✓
5. x	10. ✓ x	15. ✓ x	20. x

(Note: ALLOW x ✓ FOR ✓ x.)

SUB-TEST TWO

INSTRUCTIONS. *To be presented Slowly, Loudly, Clearly.*

Teacher says: "I am going to read you some sentences. Listen carefully and you will notice that some of them say things which are *always* true and sensible, while others say things which are *always* false and foolish. I shall read a third kind of sentence also, a kind which says a thing sometimes true and sometimes false.

Now when I read you a sentence saying something that is always true and sensible I want you to put a tick, like this, after its number. (*Teacher writes, on blackboard, large and legible* ✓ = TRUE.). When I read one that is always false and foolish I want you to put a cross, like this. (*Teacher prints* × = FALSE.) When I read one that is sometimes true and sometimes false, I want you to put both a tick *and* a cross like this. (*Teacher prints* ✓ × = SOMETIMES.) If you don't know which is the right answer, put a dash. (*Teacher prints* — = DON'T KNOW.)

For example, suppose I read, 'A Baby is older than its mother'. Is that true or false? Then what would you put after its number? Yes, a cross for false and foolish. Or suppose I read, 'An elephant is bigger than a mouse'. Is that true or false? *Always* true? Then what would you put? Yes, a tick for true and sensible. Suppose I read, 'It rains on Mondays'. Is that true or false? Yes, sometimes true, sometimes false. Then what would you put? Yes, a tick *and* a cross, for sometimes true, sometimes false.

One last word before we begin. Some of the foolish sentences may make you want to laugh. But if you laugh out loud you will tell everyone the answer. So on no account must you laugh out loud or show what you think the answer is. Laugh inside, not outside! I shall read each sentence twice. Don't forget, all you have to write for your answer is a tick, or a cross, or a tick *and* a cross. Get ready for number one.

(The key ✓ = TRUE, ✕ = FALSE, ✓ ✕ = SOMETIMES, — = DON'T KNOW, must remain on the blackboard throughout the test.)

1. If a caller comes to your house whom you don't want to see, it is best to go and tell him you are out.
2. My next door neighbour on one side and my next door neighbour on the other side live next door but one to each other.
3. As a boy gets taller his height becomes greater.
4. Every day many more women than men get married in this country.
5. Some lucky children can cycle downhill all the way from home to school and downhill all the way back from school to home.
6. Every man is his father's son.
7. If everyone could read it wouldn't take long to teach those who couldn't.
8. It is sensible to wear an overcoat.
9. The more carriages a train has the faster it can go.

10. People should never go into the water until they can swim.
11. A bird builds its nest in a tree.
12. People become cold without a fire.
13. If pneumonia is fatal the first time you get it, it's not so serious the second time.
14. A farmer hates to see it raining.
15. This present moment was yesterday's future and will be to-morrow's past.
16. A fat person eats too much.
17. A good doctor cures his patients.
18. The smartest soldier in a regiment on the march is often the only one in step.
19. It is wrong for a dog to keep barking.
20. My cousin's mother is my mother's sister."

ANSWER KEY

1. x	6. ✓	11. ✓ x	16. ✓ x
2. ✓	7. x	12. ✓ x	17. ✓ x
3. ✓	8. ✓ x	13. x	18. x
4. x	9. x	14. ✓ x	19. ✓ x
5. x	10. x	15. ✓	20. ✓ x

(Note: Allow x ✓ for ✓ x.)

SUB-TEST THREE

INSTRUCTIONS. *To be presented Slowly, Loudly, Clearly.*

Teacher says: "I expect you all know what a riddle is. It is a special kind of question that you have to find the answer to. And very often it is the kind of question that tries to catch you out, isn't it? That's why it's such good fun answering riddles. For example, I might say to you, 'What has no legs but can run?' Is it a cat, a tap, or a house? Yes, the answer to that one is, a tap. Here is another one, 'What often falls, but is never damaged?' Is it fruit, glass, a chimney, or snow? Yes, the answer is snow.

Now I am going to ask you some riddles, and each time I shall give you four words from which to choose the right answer. When you have chosen it you need not write the whole word down. Just write down the first letter. So what would you have written for TAP? Yes, the letter 'T'. And what would you have put for snow? Yes, the letter 'S'.

Very well, here are the riddles. I shall say each one twice. Don't forget, all you have to do is to choose from the four I give you the one word that makes the best answer to the riddle, and then write down its first letter. Get ready for number one.

1. What is white and good to drink? Tea? snow? chalk? milk?
2. What is shaped like an apple and often made of rubber? A pedal? a wheel? a tyre? a ball?
3. What is sour and oval in shape? An orange? an egg? a lemon? grapefruit?
4. What has two sides and is flat and round? A blackboard? an envelope? a football? a penny?
5. What always has one eye but cannot see? A potato? a dog? a needle? a giant?
6. What is cut with a knife but never bleeds? A finger? water? a loaf? iron?
7. What has a bark but cannot bite? A tree? a dog? a caterpillar? a flower?
8. What is it that you can hear and feel but cannot see? Sunshine? hail? wind? lightning?
9. What has ears but cannot listen? Wheat? a rabbit? a donkey? a cabbage?
10. What is smooth and flat and breaks easily? A tumbler? an egg? a window pane? a cup?
11. What spins and has legs? A top? a spider? a propeller? a fan?
12. What has wings and can sing? A fly? a lark? an aeroplane? a kettle?
13. What is it that the more you have of it the poorer you are? Age? worry? children? debt?
14. What can a blind man sometimes see through? A plot? fog? a telescope? window?
15. What can a person feel but not touch? Electricity? anger? fire? a tiger?
16. What can go up and down without leaving the ground? A lift? a tyre? an aeroplane? a kite?

17. What always has sound, movement, and colour?
An aeroplane? the sea? a film? a cloud?
18. What is sometimes caught accidentally and sometimes deliberately? A chill? a train? a surprise? a glimpse?
19. What is it that I can give to another and yet keep myself? A secret? a gift? faith? money?
20. What can you share with someone without reducing your portion? Work? an experience? food? distance?"

ANSWER KEY

1. M	6. L	11. S	16. T
2. B	7. T	12. L	17. S
3. L	8. W	13. D	18. G
4. P	9. W	14. P	19. F
5. N	10. W	15. A	20. E

(Note: If the whole word has been written the answer may still be counted right. Also children may obviously write or print these letters in the manner to which they are accustomed.)

SUB-TEST FOUR

INSTRUCTIONS. *To be presented Slowly, Loudly, Clearly.*

Teacher prints on the blackboard (large and legible), APPLE, ORANGE, STONE, BANANA.

Teacher says: "Look at the four words I have written on the blackboard. Three of them are like each other and one is different. Which are the three which stand for things that are like each other? Yes, apple, orange and banana are like each other. Why are they like each other and different from 'Stone'? Yes, because they are all fruits and can be eaten, while stone is not a fruit and cannot be eaten.

Look at the next four. Teacher prints on the blackboard CAT, DOG, RAT, BLACKBIRD. Which is the word that is different from the others? Yes, blackbird is the word that is different. Why? Yes, because blackbird is *not* the name of an animal, and all the others are.

Now I am going to read you some more words, four at a time. Each time I want you to pick out the one that is *most different* from the others. Then write down as the answer *its first letter*. You need not write the whole word down, just the first letter. So what letter would you have written down to show that 'STONE' was the *different* word? Yes, the letter 'S'. And what would you have written down to show that 'BLACKBIRD' was the different word? Yes, 'B' for Blackbird.

I shall read each set of words twice. If you cannot pick out the *different* word, just put a dash. Get ready for number one.

S.C.E.R.T., West Bengal

Date 29...3...55...

Acc. No. 784.....

1. Slim, fat, plump, rich.
2. Train, bus, car, steamer.
3. Swan, thrush, lark, cow
4. Bugle, pen, whistle, flute.
5. Here, there, nowhere, when.
6. House, car, gate, rat
7. Wood, tin, gold, iron.
8. Giant, dwarf, pigmy, midget.
9. House, cottage, theatre, palace.
10. Trio, group, quartet, sextet.
11. Delight, greed, height, despair.
12. Pair, dozen, batch, gross.
13. Well, mound, quarry, pit.
14. Ball, globe, pear, orange.
15. Often, everywhere, seldom, occasionally.
16. Malice, envy, pity, jealousy.
17. Praise, comment, flattery, approval.
18. Advise, blame, rebuke, scold.
19. Order, discuss, contend, argue.
20. Men, geese, boy, ducks."

N.B. "Pair" and "Pear" to be written on the Board as they occur.



ANSWER KEY

1. R	6. R	11. H	16. P
2. S	7. W	12. B	17. C
3. C	8. G	13. M	18. A
4. P	9. T	14. P	19. O
5. W	10. G	15. E	20. B

(Note: If the whole word has been written the answer may still be counted right. Also do not penalise for "J" instead of "G" in item 8, and for "E" or "I" instead of "H" in item 11. Again, as in the previous sub-test, children may obviously write or print answer letters in the manner to which they are accustomed.)

SUB-TEST FIVE

INSTRUCTIONS. *To be presented Slowly, Loudly, Clearly.*

In this test all you have to do is to listen very carefully to each question and do exactly as you are told, because each question will ask you to carry out certain instructions. I shall say each question twice, so be sure you listen carefully both times, and do not try to carry out any instruction until you have heard it twice. Get ready for number one.

1. Put five crosses side by side on the line and draw a ring round the middle one.
2. If there are six days in a week write the number 6. If there are more than six put a tick. If there are less than six put a cross.
3. If there are more days in a week than months in a year put a tick. If not put a cross. If there are the same number put a letter 'S'.
4. Put ten crosses side by side on the line and draw a ring round the cross which is fourth from the left as you look at them.
5. 1, 3, 5, 7, 9, 11, 13. If I go on counting like this will the next number be 12 or 14 or 15 or 16? Write it down.
6. If our January comes in Spring write figure 1. If it comes in Summer write figure 2, in Autumn figure 3, in Winter figure 4.
7. 1, 4, 7, 10, 13, 16. If I go on counting like this will the next number be 15 or 20 or 17 or 19? Write it down.

8. Write the two letters which are next to each other in the alphabet and also next to each other in this word on the blackboard. (*Teacher prints the word 'DISTANCE' on the blackboard.*)
9. What hour comes midway between noon and midnight? Is it 3, 6, 8, or 10 o'clock? Write its number down.
10. What month is in the same position from the end of the year as March is from the beginning? Write down the first letter of its name.
11. Write the letter of the alphabet which comes midway between 'D' and 'H'.
12. Write the letter which is in the same position from the end of the Alphabet as 'D' is from the beginning.
13. 1, 2, 4, 8, 16. If I go on counting like this will the next number be 24 or 32 or 48 or 64? Write it down.
14. 56, 50, 44, 38, 32. If I go on counting like this will the next number be 28 or 24 or 26 or 20? Write it down.
15. If figure 1 stands for January, 3 for February, 5 for March, 7 for April and so on, what number will stand for July? Write it down.
16. If 'Z' stands for December, 'Y' for November, 'X' for October and so on, what letter will stand for August? Write it down.
17. If figure 1 stood for letter 'A', 2 for 'B', 3 for 'C', and so on, write down the figures which would take the place of the word 'DAY'. (*Teacher prints the word 'DAY' on the blackboard.*)
18. Write the two letters which are in the same position to one another in the word 'ARCH' as they

are in the alphabet. (*Teacher prints the word 'ARCH' on the blackboard.*)

19. What time is in the same position *before* midnight as 2.30 p.m. is *after* noon? Write it down.
20. What time is twice as long after noon as it is before midnight? Write it down.

ANSWER KEY

- | | |
|------------------------|------------------------|
| 1. x x ⊗ x x | 11. F |
| 2. ✓ | 12. W |
| 3. X | 13. 32 |
| 4. x x x ⊗ x x x x x x | 14. 26 |
| 5. 15 | 15. 13 |
| 6. 4 | 16. V |
| 7. 19 | 17. 4125 |
| 8. ST | 18. AC |
| 9. 6 | 19. 9.30 p.m. (or 9.30 |
| 10. O (Allow "October" | or half-past nine.) |
| also.) | 20. 8 p.m. (or 8, or |
| | 8 o'clock.) |



TABLES OF NORMS

(Though norms are given to cover the chronological age range $7\frac{1}{2}$ years to 12 years, teachers are reminded that the test has been designed primarily for presentation to children between the ages of 8 and 11.)

NORMS. 7½ years—9½ years

Age	Score																		
Mths.	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25			
90	91	92	92	93	93	94	95	95	96	96	97	97	98	99	100	101			
91	91	91	92	92	93	93	94	94	95	95	96	96	97	98	99	100			
92	90	91	91	92	92	93	93	94	94	95	96	96	97	97	98	99			
93	89	90	91	91	92	92	93	93	94	94	95	95	96	96	97	98			
94	89	89	90	91	91	92	92	93	93	94	94	95	96	96	97	98			
95	88	89	89	90	91	91	92	92	93	93	94	94	95	95	96	97			
96	87	88	89	89	90	90	91	91	92	92	93	94	94	95	96	96			
97	86	87	88	88	89	89	90	90	91	91	92	93	94	94	95	95			
98	85	86	87	87	88	88	89	89	90	90	91	92	93	93	94	95			
99	83	83	85	86	87	87	88	88	89	89	90	91	92	93	93	94			
100	81	82	83	84	85	86	87	87	88	88	89	90	91	92	93	93			
101	80	80	81	81	82	83	84	85	86	86	87	88	89	90	91	92			
102	79	80	80	81	81	82	83	84	85	86	86	87	88	89	90	91			
103	78	79	80	80	81	81	82	83	84	85	86	86	87	88	89	90			
104	77	78	79	80	80	81	81	82	83	84	85	86	86	87	88	89			
105	75	77	78	79	80	80	81	81	82	82	83	83	84	85	87	88			
106	73	75	77	78	79	80	80	81	81	82	82	83	83	84	85	87			
107	71	73	75	77	78	79	80	80	81	81	82	82	83	83	84	85			
108	69	71	73	75	77	78	79	80	80	81	81	82	82	83	83	84			
109	67	69	71	73	75	77	77	79	80	80	81	81	82	82	83	83			
110	65	67	69	71	73	75	75	77	79	80	80	81	81	82	82	83			
111	65	65	67	69	71	72	73	75	77	79	80	80	81	81	82	82			
112	64	65	65	67	69	71	72	73	75	77	79	80	80	81	81	82			
113	64	64	65	65	67	69	71	72	73	75	77	79	80	80	81	81			
114	63	64	64	65	65	67	69	71	72	73	74	75	77	78	78	79			

NORMS. 7½ years—9½ years

Age	Score												
Mths.	26	27	28	29	30	31	32	33	34	35	36	37	38
90	102	103	104	104	105	106	107	108	109	110	110	111	111
91	100	102	103	103	104	105	106	107	108	109	109	110	110
92	100	100	102	102	103	104	105	106	107	108	108	109	109
93	99	100	100	101	102	103	104	105	106	107	107	108	108
94	98	99	100	100	101	102	103	104	105	106	106	107	108
95	97	98	99	99	100	101	102	103	104	105	105	106	107
96	97	97	98	98	99	100	101	102	103	104	104	105	106
97	96	96	97	97	98	99	100	101	102	103	103	104	105
98	95	96	96	97	97	98	99	100	101	102	102	103	104
99	94	95	95	96	96	97	98	99	100	101	101	102	103
100	94	94	95	95	96	96	97	98	99	100	101	101	102
101	93	94	94	95	95	96	96	97	98	99	100	101	101
102	92	93	94	94	95	95	96	96	97	98	99	100	101
103	91	92	93	94	94	95	95	96	96	97	98	99	100
104	90	91	92	93	94	94	95	95	96	96	97	98	99
105	89	90	91	92	93	94	94	95	95	96	96	97	98
106	88	89	90	91	91	92	93	94	95	95	96	96	97
107	87	88	89	90	91	91	92	93	94	95	95	96	96
108	85	87	88	89	90	91	91	92	93	94	95	95	96
109	84	85	87	88	89	90	91	91	92	93	94	95	95
110	83	84	85	87	88	89	90	91	91	92	93	94	95
111	83	83	84	85	87	88	89	90	91	91	92	93	94
112	82	83	83	84	85	87	88	89	90	91	91	92	93
113	82	82	83	83	84	85	86	87	89	90	91	91	92
114	80	80	81	82	83	83	84	85	86	87	88	89	90

NORMS. 7½ years—9½ years

Age	Score												
Mths.	39	40	41	42	43	44	45	46	47	48	49	50	51
90	112	112	113	113	114	114	115	115	116	118	120	122	124
91	111	111	112	112	113	113	114	115	115	116	118	120	122
92	110	110	111	111	112	112	113	113	115	115	116	118	120
93	109	109	110	110	111	111	112	113	113	115	115	116	118
94	108	109	109	110	110	111	111	112	113	113	115	115	116
95	108	108	109	109	110	110	111	111	112	113	113	115	115
96	107	108	108	109	109	110	110	111	111	112	113	113	115
97	106	107	108	108	109	109	110	110	111	111	112	113	113
98	105	106	107	108	108	109	109	110	110	111	111	112	113
99	104	105	106	107	108	108	109	109	110	110	111	111	112
100	103	104	105	106	107	108	108	109	109	110	110	111	111
101	102	103	104	105	106	107	108	108	109	109	110	110	111
102	101	102	103	104	105	106	107	108	108	109	109	110	110
103	101	101	102	103	104	105	106	107	108	108	109	109	110
104	100	101	101	102	103	104	105	106	107	108	108	109	109
105	99	100	101	101	102	103	104	105	106	107	108	108	109
106	98	99	100	101	101	102	103	104	105	106	107	108	108
107	97	98	99	100	101	101	102	103	104	105	106	107	108
108	96	97	98	99	100	101	101	102	103	104	105	106	107
109	96	96	97	98	99	100	101	101	102	103	104	105	106
110	95	96	96	97	98	99	100	101	101	102	103	104	105
111	95	95	96	96	97	98	99	100	101	101	102	103	104
112	94	95	95	96	96	97	98	99	100	101	101	102	103
113	93	94	95	95	96	96	97	98	99	100	101	101	102
114	91	92	93	94	95	96	96	97	98	99	99	100	101

NORMS. 7½ years—9½ years

Age	Score											
Mths.	52	53	54	55	56	57	58	59	60	61	62	63
90	126	127	129	131	133	135	136	137	138	140	142	144
91	124	126	127	129	131	133	135	136	137	139	141	143
92	122	124	126	127	129	131	133	135	136	138	140	142
93	120	122	124	126	127	129	131	133	135	137	139	141
94	118	120	122	124	126	127	129	131	133	135	137	139
95	116	118	120	122	124	126	127	129	131	133	135	137
96	115	116	118	120	122	124	126	127	129	131	133	135
97	115	115	116	118	120	122	124	126	128	130	132	134
98	113	115	115	116	118	120	122	124	126	128	130	132
99	113	113	115	115	116	118	120	122	124	126	128	130
100	112	113	113	115	115	116	118	120	122	124	126	128
101	111	112	113	113	115	116	118	119	121	123	125	127
102	111	111	112	113	113	115	116	118	120	122	124	126
103	110	110	111	112	113	113	115	116	118	120	122	124
104	110	110	111	111	112	113	113	115	116	117	120	122
105	109	110	110	111	111	112	113	114	116	117	118	120
106	109	109	110	110	111	111	112	113	114	116	117	119
107	108	109	109	110	110	111	111	112	113	114	116	117
108	108	108	109	109	110	110	111	111	112	113	114	116
109	107	108	108	109	109	110	110	111	111	112	113	114
110	106	107	108	108	109	109	110	110	111	111	112	114
111	105	106	107	108	108	109	109	110	110	111	111	112
112	104	105	106	107	108	108	109	109	110	110	111	111
113	103	104	105	106	107	108	108	109	109	110	110	111
114	102	103	104	105	106	107	107	108	109	109	110	110

NORMS. $7\frac{1}{2}$ years— $9\frac{1}{2}$ years

Age	Score												
Mths.	64	65	66	67	68	69	70	71	72	73	74	75	
90	146	148	150	—	—	—	—	—	—	—	—	—	—
91	145	147	149	150	—	—	—	—	—	—	—	—	—
92	144	146	148	149	150	—	—	—	—	—	—	—	—
93	143	145	147	149	150	—	—	—	—	—	—	—	—
94	141	143	145	147	149	150	—	—	—	—	—	—	—
95	139	141	143	145	147	149	150	—	—	—	—	—	—
96	137	139	141	143	145	147	149	150	—	—	—	—	—
97	136	138	140	142	144	146	148	150	—	—	—	—	—
98	134	136	138	140	142	144	146	148	150	—	—	—	—
99	132	134	136	138	140	142	144	146	148	150	—	—	—
100	130	132	134	136	138	140	142	144	146	148	150	—	—
101	128	130	132	134	136	138	140	142	144	146	148	150	—
102	128	130	132	134	136	138	140	142	144	146	148	150	—
103	126	128	130	132	134	136	138	140	142	144	146	148	—
104	124	126	128	130	132	134	136	138	140	142	144	146	—
105	122	124	126	128	130	132	134	136	138	140	142	144	—
106	120	122	124	126	128	130	132	134	136	138	140	142	—
107	119	121	123	125	127	129	131	133	135	137	139	141	—
108	118	120	122	124	126	128	130	132	134	136	138	140	—
109	117	119	121	123	125	127	129	131	133	135	137	139	—
110	116	117	119	121	123	125	127	129	131	133	135	137	—
111	114	115	117	119	121	123	125	127	129	131	133	135	—
112	112	113	115	117	119	121	123	125	127	129	131	133	—
113	112	113	115	117	119	121	123	125	127	129	131	133	—
114	111	112	113	115	117	119	121	123	125	127	129	131	—

NORMS. $7\frac{1}{2}$ years— $9\frac{1}{2}$ years

Age	Score									
Mths.	76	77	78	79	80	81	82	83	84	85
90	—	—	—	—	—	—	—	—	—	—
91	—	—	—	—	—	—	—	—	—	—
92	—	—	—	—	—	—	—	—	—	—
93	—	—	—	—	—	—	—	—	—	—
94	—	—	—	—	—	—	—	—	—	—
95	—	—	—	—	—	—	—	—	—	—
96	—	—	—	—	—	—	—	—	—	—
97	—	—	—	—	—	—	—	—	—	—
98	—	—	—	—	—	—	—	—	—	—
99	—	—	—	—	—	—	—	—	—	—
100	—	—	—	—	—	—	—	—	—	—
101	—	—	—	—	—	—	—	—	—	—
102	—	—	—	—	—	—	—	—	—	—
103	150	—	—	—	—	—	—	—	—	—
104	148	150	—	—	—	—	—	—	—	—
105	146	148	150*	—	—	—	—	—	—	—
106	144	146	148	150	—	—	—	—	—	—
107	143	145	147	149	150	—	—	—	—	—
108	142	144	146	148	150	—	—	—	—	—
109	141	143	145	147	149	150	—	—	—	—
110	139	141	143	145	147	149	150	—	—	—
111	137	139	141	143	145	147	149	150	—	—
112	135	137	139	141	143	145	147	149	150	—
113	135	137	139	141	143	145	147	149	150	—
114	133	135	137	139	141	143	145	147	149	150

NORMS. 9/7 years—11/7 years

Age	Score																								
Mths.	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25									
115	—	—	—	—	—	—	—	64	66	68	69	71	73	74	75	76									
116	—	—	—	—	—	—	—	—	65	66	67	69	71	73	74	75									
117	—	—	—	—	—	—	—	—	—	64	65	67	69	71	72	73									
118	—	—	—	—	—	—	—	—	—	—	63	64	66	68	70	71									
119	—	—	—	—	—	—	—	—	—	—	—	—	64	66	68	69									
120	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	65	67								
121	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	64								
122	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
123	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
124	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
125	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
126	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
127	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
128	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
129	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
130	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
131	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
132	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
133	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
134	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
135	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
136	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
137	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
138	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								
139	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—								

NORMS. 9/7 years—11/7 years

Age	Score																		
Mths.	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41			
115	77	78	79	80	81	82	83	84	85	85	86	87	88	89	91	91			
116	76	77	78	79	80	81	82	83	84	84	85	86	87	88	89	90			
117	75	76	77	78	79	80	81	82	83	84	84	85	86	87	88	89			
118	73	74	75	76	78	79	80	81	82	83	84	84	85	86	87	88			
119	71	72	73	74	76	77	78	79	80	81	82	83	84	84	85	86			
120	69	70	71	72	74	76	77	78	79	80	81	82	83	84	84	85			
121	66	68	69	70	72	74	75	76	77	78	79	80	81	82	83	84			
122	64	66	67	68	70	72	73	74	76	77	78	79	80	81	82	83			
123	—	64	65	66	68	69	71	72	74	76	77	78	79	80	81	82			
124	—	—	—	64	66	67	68	70	72	74	76	77	78	79	80	81			
125	—	—	—	—	—	65	66	68	70	72	74	75	76	77	79	80			
126	—	—	—	—	—	—	64	66	68	70	72	73	74	75	77	79			
127	—	—	—	—	—	—	—	64	66	68	70	71	72	74	76	77			
128	—	—	—	—	—	—	—	—	64	66	68	69	70	72	74	75			
129	—	—	—	—	—	—	—	—	—	64	66	67	69	71	72	73			
130	—	—	—	—	—	—	—	—	—	—	—	65	67	69	70	71			
131	—	—	—	—	—	—	—	—	—	—	—	—	65	67	68	69			
132	—	—	—	—	—	—	—	—	—	—	—	—	—	65	66	67			
133	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	65			
134	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
135	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
136	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
137	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
138	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
139	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			

NORMS. 9/7 years—11/7 years

Age	Score														
Mths.	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
115	92	92	93	94	95	96	97	98	99	100	101	102	103	104	105
116	91	92	92	93	94	95	96	97	98	99	100	101	102	103	104
117	90	91	92	92	93	94	95	96	97	98	99	100	101	102	103
118	89	90	91	92	92	93	94	95	96	97	98	99	100	101	102
119	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101
120	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
121	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
122	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98
123	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97
124	82	83	84	84	85	86	87	88	89	90	91	92	93	94	95
125	81	82	83	84	84	85	86	87	88	89	90	91	92	93	94
126	80	81	82	83	84	84	85	86	87	88	89	90	91	92	93
127	78	79	80	81	82	83	84	84	85	86	87	88	89	90	91
128	76	77	78	79	80	81	83	84	84	85	86	87	88	89	90
129	74	75	76	78	79	80	81	83	84	84	85	86	87	88	89
130	72	73	74	76	78	79	80	81	82	84	84	85	86	87	88
131	70	72	72	74	76	77	78	79	80	82	84	84	85	86	87
132	68	70	70	72	74	75	76	78	78	80	82	84	84	85	86
133	66	68	68	70	72	74	75	76	77	78	80	82	83	84	84
134	64	66	66	68	70	72	73	74	75	76	78	80	82	83	84
135	—	—	64	66	68	70	71	72	73	74	76	78	80	81	82
136	—	—	—	64	66	68	69	70	71	72	74	76	78	79	80
137	—	—	—	—	—	66	67	68	69	70	72	74	76	78	80
138	—	—	—	—	—	—	65	66	67	68	70	72	74	76	78
139	—	—	—	—	—	—	—	—	65	66	68	70	72	74	76

NORMS. 9/7 years—11/7 years

Age	69 Mths.	70	71	72	73	74	75	76	77	78	79	80	81
115	118	119	121	123	125	127	129	131	133	135	137	139	141
116	117	118	119	121	123	125	127	129	131	133	135	137	139
117	116	117	118	119	121	123	125	127	129	131	133	135	137
118	115	116	117	118	119	121	123	125	127	129	131	133	135
119	114	115	116	117	118	120	122	124	126	128	130	132	133
120	113	114	115	116	117	118	120	122	124	126	128	130	132
121	112	113	114	115	116	117	118	120	122	124	126	128	130
122	111	112	113	114	115	116	117	118	120	122	124	126	128
123	110	111	112	113	114	115	116	117	118	120	122	124	126
124	109	110	111	112	113	114	115	116	117	119	121	123	125
125	107	109	110	111	112	113	114	115	116	118	120	122	124
126	106	107	108	109	110	111	112	113	114	116	118	120	122
127	105	106	107	108	109	110	111	112	113	115	117	119	121
128	104	105	106	107	108	109	110	111	112	113	115	117	119
129	103	104	105	106	107	108	109	110	111	112	113	115	117
130	102	103	104	105	106	107	108	109	110	111	112	114	116
131	101	102	103	104	105	106	107	108	109	110	111	112	114
132	100	101	102	103	104	105	106	107	108	109	110	111	113
133	99	100	101	102	103	104	105	106	107	108	109	110	111
134	98	99	100	101	102	103	104	105	106	107	108	109	110
135	87	98	99	100	101	102	103	104	105	106	107	108	109
136	96	97	98	99	100	101	102	103	104	105	106	107	108
137	94	96	97	98	99	100	101	102	103	104	105	106	107
138	92	94	95	96	97	98	99	100	102	103	104	105	106
139	91	92	94	95	96	97	98	99	100	102	103	104	105

NORMS. 9/7 years—11/7 years

Age	Score												
Mths.	57	58	59	60	61	62	63	64	65	66	67	68	
115	106	107	108	108	108	109	110	111	112	114	115	116	
116	105	106	107	108	108	108	109	110	111	113	114	115	
117	104	105	106	107	108	108	109	110	111	112	113	114	
118	103	104	105	106	107	108	108	109	110	111	112	113	
119	102	103	104	105	106	107	108	109	110	111	112	113	
120	101	102	103	104	105	106	107	108	109	110	111	112	
121	100	101	102	103	104	105	106	107	108	109	110	111	
122	99	100	101	102	103	104	105	106	107	108	109	110	
123	98	99	100	101	102	103	104	105	106	107	108	109	
124	96	97	98	99	100	101	102	103	104	105	106	107	
125	95	96	97	98	99	100	101	102	103	104	105	106	
126	94	95	96	97	98	99	100	101	102	103	104	105	
127	92	93	95	96	97	98	99	100	101	102	103	104	
128	91	92	93	95	96	97	98	99	100	101	102	103	
129	90	91	92	93	95	96	97	98	99	100	101	102	
130	89	90	91	92	93	95	96	97	98	99	100	101	
131	88	88	89	90	91	92	93	96	97	98	99	100	
132	87	88	89	90	91	92	93	94	96	97	98	99	
133	85	86	87	88	89	90	91	92	94	95	96	97	
134	84	85	86	87	88	89	90	91	92	93	94	95	
135	83	84	85	86	87	88	89	90	91	92	93	94	
136	81	82	83	84	85	86	87	88	89	90	91	92	
137	80	81	82	83	84	85	86	87	88	89	90	91	
138	79	80	81	82	83	84	85	86	87	88	89	90	
139	77	78	80	81	82	83	84	85	86	87	88	89	

NORMS. 9/7 years—11/7 years

Age	Score											
Mths.	82	83	84	85	86	87	88	89	90	91	92	93
115	143	145	147	149	150	—	—	—	—	—	—	—
116	141	143	145	147	149	150	—	—	—	—	—	—
117	139	141	143	145	147	149	150	—	—	—	—	—
118	137	139	141	143	145	147	149	151	—	—	—	—
119	136	138	140	142	144	146	148	150	—	—	—	—
120	134	136	138	140	142	144	146	148	150	—	—	—
121	132	134	136	138	140	142	144	146	148	150	—	—
122	130	132	134	136	138	140	142	144	146	148	150	—
123	128	130	132	134	136	138	140	142	144	146	148	150
124	127	129	131	133	135	137	139	141	143	145	147	149
125	126	128	130	132	134	136	138	140	142	144	146	148
126	124	126	128	130	132	134	136	138	140	142	144	146
127	123	125	127	129	131	133	135	137	139	141	143	145
128	121	123	125	127	129	131	133	135	137	139	141	143
129	119	121	123	125	127	129	131	133	135	137	139	141
130	118	120	122	124	126	128	130	132	134	136	138	140
131	116	118	120	122	124	126	128	130	132	134	136	138
132	115	117	119	121	123	125	127	129	131	133	135	137
133	113	115	117	119	121	123	125	127	129	131	133	135
134	111	113	115	117	119	121	123	125	127	129	131	133
135	110	111	113	115	117	119	121	123	125	127	129	131
136	109	110	112	114	116	118	120	122	124	126	128	130
137	108	109	110	112	114	116	118	120	122	124	126	128
138	107	108	109	110	112	114	116	118	120	122	124	126
139	106	107	108	109	110	112	114	116	118	120	122	124

94 95 96 97 98 99 100

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—	—	—	—	—	—	—
151	—	—	—	—	—	—
150	—	—	—	—	—	—
148	150	—	—	—	—	—
147	149	150	—	—	—	—
145	147	149	151	—	—	—
143	145	147	149	151	—	—
142	144	146	148	150	—	—
140	142	144	146	148	150	—
139	141	143	145	147	149	151
137	139	141	143	145	147	149
135	137	139	141	143	145	147
133	135	137	139	141	143	145
132	134	136	138	140	142	144
130	132	134	136	138	140	142
128	130	132	134	136	138	140
126	128	130	132	134	136	138

NORMS. 11/8 years—12/0 years

Age Mths.	Score															
	52	53	54	55	56	57	58	59	60	61	62	63	64	65		
140	64	66	68	70	72	74	76	78	80	81	82	83	84	85
141	—	64	66	68	70	72	74	76	78	80	81	82	83	84
142	—	—	64	66	68	70	72	74	76	78	80	81	82	83
143	—	—	—	64	66	68	70	72	74	76	78	80	81	82
144	—	—	—	—	64	66	68	70	72	74	76	78	80	81

		66	67	68	69	70	71	72	73	74	75	76	77	78	79	
140	86	87	88	89	90	91	91	92	93	94	96	98	100	102
141	85	86	87	88	89	90	91	91	92	93	94	96	98	100
142	84	85	86	87	88	89	90	91	91	92	93	94	96	98
143	83	84	85	86	87	88	89	90	90	91	91	92	94	96
144	82	83	84	85	86	87	88	89	90	90	91	91	92	94

	80	81	82	83	84	85	86	87	88	89	90	91	92	93
140	103	104	105	106	107	108	109	111	113	115	117	118	120	122
141	102	103	104	105	106	107	108	109	111	113	115	117	118	120
142	100	102	103	104	105	106	107	108	109	111	113	115	117	118
143	98	100	102	103	104	105	106	107	108	109	111	113	115	117
144	96	98	99	101	103	104	105	106	107	108	109	111	113	115

94 95 96 97 98 99 100

140	124	126	128	130	132	134	136
141	122	124	126	128	130	132	134
142	120	122	124	126	128	130	132
143	118	120	122	124	126	128	130
144	117	119	121	123	125	127	129



